

इंटरनेट

मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

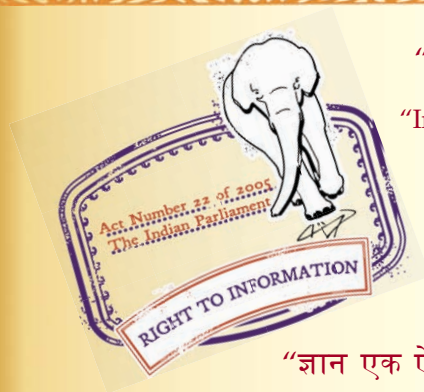
“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 9543 (1980): Spun Polyester Sewing Threads [TXD 31:
Man-Made Fibres, Cotton and their Products]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

BLANK PAGE



IS : 9543 - 1980

(Reaffirmed 1999)

Indian Standard
**SPECIFICATION FOR
SPUN POLYESTER SEWING THREADS**

UDC 677.494.674.062.2



© Copyright 1980

INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Price Rs 6.00

Gr 3

October 1980

Indian Standard

SPECIFICATION FOR SPUN POLYESTER SEWING THREADS

Cotton and Cotton Products Sectional Committee, TDC 2

Chairman

SHRI A. SUBRAMANIAM

Representing

Madura Coats Limited, Madurai

Members

SHRI A. CHELLARAJ (<i>Alternate to</i> Shri A. Subramaniam)	
SHRI T. V. ANANTHAN	The Bombay Textile Research Association, Bombay
DR N. BALASUBRAMANIAM (<i>Alternate</i>)	
CAPT J. M. L. BANSAL	Naval Headquarters
SHRI T. R. IYENGAR (<i>Alternate</i>)	
SHRI M. K. BARDHAN	Ministry of Defence (DGI)
SHRI B. P. SEN (<i>Alternate</i>)	
SHRI A. T. BASAK	Inspection Wing, Directorate General of Supplies & Disposals, New Delhi
SHRI G. N. CHATTERJI	Ministry of Defence (R & D)
SHRI R. GHOSH (<i>Alternate</i>)	
SHRI A. K. DALMIA	Jaya Shree Textiles & Industries Ltd, Rishra
SHRI K. THYAGARAJAN (<i>Alternate</i>)	
DIRECTOR OF HANDLOOMS & TEXTILES	Government of Tamil Nadu, Madras
SHRI A. GHOSH	National Test House, Calcutta
SHRI K. K. GOEL	Textiles Committee, Bombay
SHRI R. V. NANDREKAR (<i>Alternate</i>)	
SHRI R. N. JOSHI	The Millowners' Association, Bombay
SHRI R. M. MERCHANT	The Cotton Textiles Export Promotion Council, Bombay
SHRI GAUTAMBHAI S. NANAVATY	The Ahmedabad Textile Mills' Association, Ahmadabad
DR P. R. ROY (<i>Alternate</i>)	
SHRI J. K. S. NICHOLSON	The East India Cotton Association Ltd, Bombay
SHRI D. G. DAMLE (<i>Alternate</i>)	
SHRI C. K. PATEL	Calico Mills, Ahmadabad
SHRI T. RANGASWAMY	The Southern India Mills' Association, Coimbatore
SHRI A. I. S. RAO	Office of the Textile Commissioner, Bombay
SHRI S. P. GHOSAL (<i>Alternate</i>)	

(Continued on page 2)

© Copyright 1980

INDIAN STANDARDS INSTITUTION

This publication is protected under the *Indian Copyright Act* (XIV of 1957) and reproduction in whole or in part by any means except with written permission of the publisher shall be deemed to be an infringement of copyright under the said Act.

(Continued from page 1)

<i>Members</i>	<i>Representing</i>
SHRI T. V. RATNAM	South India Textile Research Association, Coimbatore
SHRI UTTAM SINGH SACHDEVA	The Delhi Cloth & General Mills Co Ltd, Delhi
DR P. V. SESHADRI	National Textile Corporation Ltd, New Delhi
SHRI O. P. BANSAL (<i>Alternate</i>)	
SHRI N. S. SHARMA	The All India Federation of Co-operative Spinning Mills Ltd, Bombay
SHRI V. N. SUBBA RAO	Binny Limited, Madras
DR V. SUNDARAM	Indian Council of Agricultural Research, New Delhi
DR V. G. MUNSHI (<i>Alternate</i>)	
SHRI HARKISHON N. UDANI	Keshavlal Talakchand (Pvt) Ltd, Bombay
SHRI S. M. CHAKRABORTY, Director (Tex)	Director General, ISI (<i>Ex-officio Member</i>)

Secretary

SHRI O. P. KHULLAR
Deputy Director (Tex), ISI

Sewing and Embroidery Threads Subcommittee, TDC 2 : 8

Convener

SHRI S. G. RATNAM Madura Coats Ltd (Thread Group), Koratti

Members

SHRI K. M. PRASAD	} <i>Alternates to Shri S. G. Ratnam</i>
SHRI C. K. GANAPATHY	
SHRI S. K. AGRAWAL	Ministry of Defence (R & D)
SHRI R. C. CHAKRAVARTY (<i>Alternate</i>)	
SHRI K. AMEENUR RAHMAN	T. Abdul Wahid & Co, Madras
SHRI M. L. BAGARIA	Jaya Shree Textiles & Industries Ltd, Rishra
SHRI R. K. GARG (<i>Alternate</i>)	
SHRI R. DHARMARAJAN	Modi Thread Mills, Modinagar
SHRI N. JAIRAJ (<i>Alternate</i>)	
SHRI B. R. DOLE	Chemicals & Fibres of India Ltd, Thane
SHRI Y. P. DESHPANDE (<i>Alternate</i>)	
SHRI J. MASCARENHAS	Mettur Beardsell Ltd, Madras
SHRI P. K. DAS (<i>Alternate</i>)	
SHRI A. K. MATHUR	Bata India Ltd, Calcutta
SHRI R. K. VERMANI (<i>Alternate</i>)	
SHRI G. V. MEDHI	Garware Nylons Ltd, Bombay
SHRI A. S. SULE (<i>Alternate</i>)	
SHRI A. K. SEHGAL	Inspection Wing, Directorate General of Supplies & Disposals, New Delhi
SHRI B. P. SEN	Ministry of Defence (DGI)
SHRI P. D. JOSHI (<i>Alternate</i>)	
SHRI R. SEN GUPTA	State Trading Corporation of India Ltd (Leather Design and Development), New Delhi
DR CHANDRAKANT J. SHAH	The Clothing Manufacturers Association of India, Bombay
SHRI N. R. SUBBARAMAN	The Ahmedabad Mfg & Calico Printing Co Ltd, Ahmadabad
SHRI C. K. PATEL (<i>Alternate</i>)	

Indian Standard

SPECIFICATION FOR SPUN POLYESTER SEWING THREADS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 15 July 1980, after the draft finalized by the Cotton and Cotton Products Sectional Committee had been approved by the Textile Division Council.

0.2 To familiarize the industry with International System of Units (SI Units), the recommended SI Units for use in the textile industry are given in Appendix C.

0.2.1 Standards of Weights and Measures Act 1976 also stipulates use of SI Units.

0.3 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the constructional details and other particulars of synthetic sewing threads spun from polyester staple fibre.

1.2 This standard does not specify the feel, lustre and shade of the sewing thread.

2. MANUFACTURE

2.1 Yarn — The yarn for sewing thread shall be evenly spun from polyester staple fibre with suitable number of turns per metre to produce a balanced thread.

2.2 The sewing threads shall be free from knots and spinning and doubling defects.

*Rules for rounding off numerical values (revised).

2.3 Direction of Twist — The direction of twist in single yarn and final thread shall be at the discretion of the manufacturer.

2.4 Finish — The dyed sewing threads shall be of the required shade, evenly dyed and free from dyeing defects.

2.4.1 The sewing threads shall be appropriately stabilized.

2.5 Working — The sewing threads shall work satisfactorily on all appropriate types of hand and power-driven sewing machines.

3. REQUIREMENTS

3.1 The sewing threads shall have a minimum tenacity of 30 gf/tex and a maximum elongation of 20 percent at break when tested by the method given in IS : 4910 (Part II)-1968*.

3.2 The sewing threads of different nominal counts shall have length (metres per kilogram) as given in Table 1, when tested by the method given in A-2.

TABLE 1 SPUN POLYESTER SEWING THREADS

VAR No.	NOMINAL COUNT OF YARN		LENGTH, Min	TICKET NUMBER (see NOTE)
	Metric Count (d tex)			
(1)	(2)		(3)	(4)
			m/kg	
1	Nm 120/3	(85 d tex × 3)	37 000	120
2	Nm 100/3	(100 d tex × 3)	31 000	100
3	Nm 120/4	(85 d tex × 4)	28 000	90
4	Nm 80/3	(125 d tex × 3)	24 000	80
5	Nm 70/3	(145 d tex × 3)	21 000	70
6	Nm 120/6	(85 d tex × 6)	19 200	60
7	Nm 70/4	(145 d tex × 4)	16 900	50
8	Nm 120/9	(85 d tex × 9)	12 800	40
9	Nm 70/6	(145 d tex × 6)	12 100	35
10	Nm 120/12	(85 d tex × 12)	9 600	30
11	Nm 26/4	(385 d tex × 4)	5 850	20
12	Nm 70/9	(145 d tex × 9)	7 200	20
13	Nm 70/12	(145 d tex × 12)	5 500	15
14	Nm 70/18	(145 d tex × 18)	3 900	12
15	Nm 70/21	(145 d tex × 21)	3 300	10
16	Nm 70/27	(145 d tex × 27)	2 600	8
17	Nm 70/40	(145 d tex × 40)	1 700	6
18	Nm 70/60	(145 d tex × 60)	1 150	4

NOTE — The ticket number of sewing threads shall be based on a 3 ply metric single yarn count, for example Nm 70/3 thread will be ticketed as 70 and Nm 120/4 thread will be ticketed as 90.

*Methods of tests for tyre yarns, cords and tyre cord fabrics made from man-made fibres: Part II Breaking load, elongation at break and tenacity.

3.2.1 In order to assist the users of sewing threads in making proper choice, the general end uses of each variety of sewing thread are given in Appendix B.

3.3 Length or Mass of Sewing Threads — The average length or mass of sewing thread in a lot shall not be less than that marked on the label. However, a tolerance of minus 2 percent shall be permitted on individual package.

3.4 Colour Fastness — The dyed threads shall conform to the following requirements:

<i>Sl No.</i>	<i>Colour Fastness to</i>	<i>Rating</i>	<i>Method of Test</i>
i)	Light (<i>see Note</i>)	4 or better	IS : 2454-1967*
ii)	Washing : Test 3:		IS : 764-1979†
	For light shades	4 or better	
	For medium and heavy shades	3 or better	

NOTE — In case of supplies to the Defence establishments, the colour fastness to light shall be 5 or better.

3.5 Residual Shrinkage — The sewing threads shall conform to the following requirements when tested by the method given in A-3:

<i>Sl No.</i>	<i>Characteristic</i>	<i>Requirement</i>
i)	Dry shrinkage at	
	a) 150°C for ordinary purpose sewing thread	2 percent, <i>Max</i>
	b) 180°C for use in stitching of permanent press fabrics	3 percent, <i>Max</i>
ii)	Wet shrinkage at 100°C (boiling water)	2 percent, <i>Max</i>

4. PACKAGING

4.1 The sewing thread shall be compactly wound in the form of tubes or in any other form as required. The free end of the thread shall be securely fastened to prevent unravelling.

*Method for determining of colour fastness of textile materials to artificial light (xenon lamp).

†Method for determining of colour fastness of textile materials to washing: Test 3 (*second revision*).

5. MARKING

5.1 Each package of sewing thread shall be marked, preferably by a label, with the following information:

- a) Name of the material;
- b) Ticket number;
- c) Nominal length or mass of thread in a unit package;
- d) Year of manufacture; and
- e) Manufacturer's name, initials or trade-mark, if any.

5.1.1 Each package of sewing thread may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

6. PACKING

6.1 Unless otherwise specified, the sewing threads shall be packed according to the method given in IS : 1066-1969*.

7. SAMPLING

7.1 Lot — The quantity of sewing thread of same variety/ticket number delivered to a buyer against a despatch note shall constitute a lot.

7.2 The conformity of the lot to the requirements of the standard shall be determined on the basis of tests carried out on the sample selected from it. Unless otherwise agreed to between the buyer and the seller, the number of tubes or packages to be selected at random from a lot shall be according to Table 2. To ensure the randomness of selection, methods given in IS : 4905-1968† shall be followed.

*Code for packaging of sewing threads.

†Methods for random sampling.

TABLE 2 SAMPLE SIZE
(Clause 7.2)

NUMBER OF PACKAGES IN THE LOT	SAMPLE SIZE	NUMBER OF NON- CONFORMING PACKAGES	SUB-SAMPLE SIZE
(1)	(2)	(3)	(4)
Up to 100	5	0	3
101 to 300	10	0	5
301 to 500	15	0	8
501 to 1 000	20	1	13
1 001 and above	30	1	20

7.3 The sample size and criteria for conformity for various characteristics shall be as follows:

<i>Characteristics</i>	<i>Sample Size</i>	<i>Criteria for Conformity</i>
Tenacity, elongation at break, length (m/kg)	All the packages according to col 2 of Table 2	Non-conforming packages not to exceed corresponding number given in col 3 of Table 2
Colour fastness and residual shrinkage	Two packages for a lot of up to 300 packages and three above that	All the packages to satisfy the requirement

APPENDIX A

(Table 1, and Clause 3.5)

METHOD OF TEST

A-1. CONDITIONING OF TEST SAMPLES

A-1.1 Unless otherwise agreed to between the buyer and the seller, the test sample shall be conditioned to a state of moisture equilibrium from dry side in a standard atmosphere (*see* IS : 6359-1974*).

NOTE — When a test sample under zero tension has been left in such a way as to expose, as far as possible, all portions of it to the standard atmosphere for 24 hours, the test sample shall be deemed to have reached a state of moisture equilibrium.

*Method of conditioning of textiles.

A-2. DETERMINATION OF LENGTH PER KILOGRAM

A-2.1 Apparatus

A-2.1.1 *Wrap Reel* — with a perimeter of 1 m $\pm$ 0.4 percent. Determine the actual perimeter of the reel with a strip of gummed paper passed tightly around the reel and secured by adhesion at the overlap. Cut the paper strip and measure its length to an accuracy of 0.1 percent.

A-2.1.2 *Adjustable Yarn Tensioning Device* — It shall be capable of giving a reeling tension that will result in skeins of the specified length when measured under a load of 0.5 gf/tex.

A-2.1.3 *Weighing Balance* — It shall be capable of weighing skeins in grams, and with a sensitivity of 1 part in 500.

A-2.2 place the package constituting the test specimen on the wrap reel and wind 100 m of thread under a suitable reeling tension (*see A-2.1.2*). Remove the thread so wound from the wrap reel and weigh in grams.

A-2.3 Calculations — Calculate the length per kilogram by the following formula:

$$\text{Length in metres per kg} = \frac{100 \times 1\,000}{W_1}$$

where

W_1 = mass in g of 100 m of thread.

A-2.4 Similarly determine the length in m/kg of other test specimens.

A-3. DETERMINATION OF RESIDUAL SHRINKAGE

A-3.1 Apparatus

A-3.1.1 *Mounting Device* — The device shall be such that a test specimen of at least 100 cm length can be mounted on it, with one of its ends in a fixed clamp under the desired dead weight tension and

- a) exposed to a temperature of 150°C or 180°C as the case may be (in case of dry shrinkage test), and
- b) immersed in water at 100°C (in case of wet shrinkage test).

A-3.1.1.1 The mounting device shall be provided with means for measuring the initial and final length of test specimens to a range of 1 mm

- a) after exposure to a high temperature (in case of dry shrinkage test), and
- b) after immersion in water and drying (in case of wet shrinkage test).

A-3.2 Procedure

A-3.2.1 Take one of the test specimen and mount it on the mounting device under tension of 0.45 ± 0.09 g per tex. Note the original length of the test specimen.

A-3.2.2 *In Case of Dry Shrinkage Test*—Prepare a small skein of the test specimen and suspend it in an oven at a temperature of $150 \pm 2^\circ\text{C}$ or $180 \pm 2^\circ\text{C}$ for 15 minutes. Note the final length.

A-3.2.3 *In Case of Wet Shrinkage Test* — Prepare a small skein of the test specimen and immerse it in a test tube containing water. Add a small quantity of soap solution (0.1 percent) to ensure adequate wetting out. In order to prevent local heating, immerse the test tube in a water bath at 100°C and keep it in this position for 15 minutes. Ensure that the water in the water-bath is above the level of water in the test tube throughout the test. Rinse the test specimen in running tap water and allow it to drip dry without tension. Note the final length.

A-3.3 Calculations

A-3.3.1 Calculate the shrinkage as follows:

$$\text{Shrinkage percent} = \frac{a_1 - b}{a} \times 100$$

where

a = original length of the specimen, and

b = final length of the specimen (see **A-3.2.2** and **A-3.2.3**).

APPENDIX B

(Clause 3.2.1)

GENERAL END USES OF SPUN POLYESTER SEWING THERADS

<i>Variety No.</i>	<i>General End Use</i>
1	Stitching of garments of light fabrics, shirtings and umbrellas
2	Stitching of garments of light and medium fabrics, brassiers, swim suits button-holing and general stitching
3	Stitching of shirting, suiting and umbrellas
4 & 5	Stitching of shirtings, suitings, swimming suits, garments of heavy fabrics and umbrellas, and also for insulation braiding of cables
6	Stitching of canvas shoes, light leather or foam rubber gloves
7	Umbrella, book binding
8	Stitching of tapes, leather garments, leather uppers for shoes, etc
9	Stitching of tapes, canvas, upholstery and healds and fishnets
10	Spindle tapes, electrical insulation and bag stitching
11	Mouth closing of fertilizer and chemical bags
12	Stitching of light leather wear, chappal uppers, and tapes and healds
13	Mouth closing of chemical and fertilizer bags
14	Bag stitching and carpets
15	Footwear and upholstery
16	Sole and welt stitching
17	Stitching of sports and travel goods and insulation of electric wires inside L T motors
18	Hammock knitting and stitching leather footwear and upholstery

APPENDIX C

(Clause 0.2)

RECOMMENDED SI UNITS FOR TEXTILES

Sl No.	CHARACTERISTIC	SI UNIT		APPLICATION
		Unit	Abbreviation	
(1)	(2)	(3)	(4)	(5)
1)	Length	Millimetre	mm	Fibres
		Millimetre, centimetre	mm, cm	Samples, test specimens (as appropriate)
		Metre	m	Yarns, ropes, cordage, fabrics
2)	Width	Millimetre	mm	Narrow fabrics
		Centimetre	cm	Other fabrics
		Millimetre, centimetre	mm, cm	Samples, test specimens (as appropriate)
		Centimetre, metre	cm, m	Carpets, druggets, <i>DURRIES</i> (as appropriate)
3)	Thickness	Micrometre (micron)	μ m	Delicate fabrics
		Millimetre	mm	Other fabrics, carpets, felts
4)	Linear density	Tex	tex	Yarns
		Millitex	mtex	Fibres
		Decitex	dtex	Filaments, filament yarns
		Kilotex	ktex	Slivers, ropes, cordage
5)	Diameter	Micrometre (micron)	μ m	Fibres
		Millimetre	mm	Yarns, ropes, cordage
6)	Circumference	Millimetre	mm	Ropes, cordage
7)	Threads in fabric:			Woven fabrics (as appropriate)
	a) Lengthwise	Number per centimetre	ends/cm	
		Number per decimetre	ends/dm	
	b) Widthwise	Number per centimetre	picks/cm	
		Number per decimetre	picks/dm	
8)	Warp threads in loom	Number per centimetre	ends/cm	Reeds
9)	Stitches in knitted fabric:			Knitted fabrics (as appropriate)
	a) Lengthwise	Courses per centimetre	courses/cm	
		Courses per decimetre	courses/dm	
	b) Widthwise	Wales per centimetre	wales/cm	
		Wales per decimetre	wales/dm	

Sl No.	CHARACTERISTIC	SI UNIT		APPLICATION
		Unit	Abbreviation	
(1)	(2)	(3)	(4)	(5)
10)	Stitch length	Millimetre	mm	Knitted fabrics, made-up items
11)	Mass per unit area	Grams per square metre	g/m ²	Fabrics
12)	Mass per unit length	Grams per metre	g/m	Fabrics
13)	Twist	Turns per centimetre	turns/cm	Yarns, ropes, cordage (as appropriate)
		Turns per metre	turns/m	
14)	Test or gauge length	Millimetre, centimetre	mm, cm	Fibre, yarn and fabric specimens (as appropriate)
15)	Breaking load	Millinewton	mN	Fibres, delicate yarns (individual or skeins)
		Newton	N	Strong yarns (individual or skeins), ropes, cordage, fabrics
16)	Breaking length	Kilometre	km	Yarns
17)	Tenacity	Millinewton per tex	mN/tex	Fibres, yarns (individual or skeins)
18)	Twist factor or twist multiplier	Turns per centimetre $\times$ square root of tex	turns/cm $\times \sqrt{\text{tex}}$	Yarns (as appropriate)
		Turns per metre $\times$ square root of tex	turns/m $\times \sqrt{\text{tex}}$	
19)	Bursting strength	Newton per square centimetre	N/cm ²	Fabrics
20)	Tear strength	Millinewton, newton	mN, N	Fabrics (as appropriate)
21)	Pile height	Millimetre	mm	Carpets
22)	Pile density	Mass of pile yarn in grams per square metre per millimetre pile height	g/m ² /mm pile height	Pile carpets
23)	Elastic modulus	Millinewton per tex per unit deformation	mN/tex/unit deformation	Fibres, yarns, strands